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Awards made under the Two Japanese Large-scale R&D Programs

This report updates an earlier report (see http://www.nsftokyo.org/rm09-04.pdf)
on the two large-scale R&D programs: (1) Transformative Research Program; and (2) Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST).
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When the Hatoyama administration came into power in September 2009, program activities were put on hold while the new administration reviewed all budget actions proposed under their predecessor. The review resulted in some modifications to the scale but not the goals of the programs. The Council for Science and Technology Policy (CSTP) recently announced the awards for both programs. This report summarizes them.

I. Transformative Research program

Back in May 2008, CSTP established the 'Fund for Promoting Innovative Technologies" and identified 23 technologies to promote with government investments (see http://www.nsftokyo.org/rm08-05.pdf). Under the 2009 Transformative Research Program, CSTP intended to support 5 of the 23 technologies: Brain machine interface; Regenerative

medicine/toxicity evaluation using iPS (induced pluripotent stem) cells; Spintronics; Solar energy technology; and New superconductive materials. Only those ongoing projects in these five areas were eligible to apply. The awards were intended to accelerate progress of their research and to bring the outcomes closer to application with additional funding. Submission deadline was late July 2009.

CSTP announced a final decision in February 2010 to support 3 of the 5 technologies originally selected: Brain machine interface, Spintronics, and Solar energy technology. Table 1 below lists the three awards. It should be noted that the other two areas are supported under the FIRST program (Table 2). The number of applications, the review process, and the total award amounts were not made public.

MEXT (Ministry of Education, S&T) has the overall management responsibility and JST (Japan S&T Agency) administers the awards. It is not expected that this program will hold additional competitions in the future.

Table 1: Transformative Research Program Awards

Name	Affiliation	Transformative Technology	Award Amount for JFY2010 ($ at $1=¥100)
Meigen LIU	Keio University	BMI (Brain Machine Interface): Support for the Elderly and the Disabled	Up to 8 million
Koji ANDO	AIST (National Institute of Advanced Industrial Science and Technology)	Spintronics Technology	Up to 10 million
Yoshiaki NAKANO	University of Tokyo	Efficient Solar Energy Technology	Up to 10 million

II. FIRST program

(Funding Program for World-Leading Innovative R&D on Science and Technology)

CSTP announced on July 3, 2009, the establishment of a large-scale research program to support new, 'world-class' technologies and to bring them close to application within 3-5 years. FIRST was initially budgeted for ¥270 billion (~$2.7 billion) as part of the JFY2009 Economic Stimulus Package (see http://www.nsftokyo.org/rm09-03.pdf), and was to support 30 projects for 5 years.

By the deadline of July 31, 2009, 565 proposals were submitted to CSTP. A 13-member program committee chaired by the then Prime Minister, and a 24-member working group chaired by a CSTP executive member, were set up at CSTP to review the proposals. The working group prepared an initial shortlist of 60 proposals by mid-August 2009; the program committee then prepared a final shortlist of 30 proposals by the end of August 2009 for a final decision by CSTP.

The change in administration drastically altered this program. The selected 30 PIs were asked to wait for further notice of their awards. After discussions between the Diet members and CSTP, the special FIRST program fund of ¥270 billion (~$2.7 billion) was reduced to ¥150 billion (~$1.5 billion) for two reasons: (1) $2.7 billion is an enormous and unprecedented amount for one R&D program; and (2) the selection of the 30 projects was made in extreme haste (in only one month). The ¥150 billion (~$1.5 billion) was further divided into two pots, ¥100 billion (~$1.0 billion) to support the already selected 30 FIRST projects, and ¥50 billion (~$0.5 billion) to support a new program for young and women scientists.

The reduction meant that all the 30 projects had to be redesigned, as the grant size came to average only ¥3.3 billion (~$33 million) instead of the originally planned ¥9 billion (~$90 million). The 30 PIs were asked to resubmit their proposals to CSTP by December 14, 2009, for review by discipline-specific panels established within JSPS (Japan Society for the Promotion of Science). Recommendations formulated by the JSPS panels were passed back to CSTP for further review, involving site visits and interviews with the PIs. A final decision was made at the CSTP meeting chaired by the Prime Minister Hatoyama on March 9, 2010. The list of the awards is summarized in Table 2 below.

Table 2: FIRST Awards

PI Name	Affiliation	Award Management Organization	Award Title	Award Amount/ 5 years ($ million at $1/¥100)
Kazuyuki AIHARA	University of Tokyo	JST (Japan S&T Agency)	Mathematical Theory for Modeling Complex Systems and Its Transdisciplinary Applications in S&T	19.36
Shizuo AKIRA	Osaka University	Osaka University	Comprehensive Understanding of Immune Dynamism: Toward Manipulation of Immune Responses	25.20
Chihara ADACHI	Kyushu University	Kyushu University	Challenges for Super Organic Electroluminescence Devices through Innovation of Organic Semiconducting Materials	32.40
Yasuhiko ARAKAWA	University of Tokyo	Optoelectronic Industry and Technology Development Association	Technology Development for Photonic-Electronic Integration System	38.99
Masayoshi ESASHI	Tohoku University	Tohoku University	Research and Development on Integrated Microsystems	30.87
Hideo OHNO	Tohoku University	Tohoku University	Research and development on Ultra-Low Power Spintronics-based Logic VLSIs	32.00
Teruo OKANO	Tokyo Women's Medical University	JST	System Integration for Industrialization of Regenerative Medicine: Creation of Artificial Organ Factory	33.84
Hideyuki OKANO	Keio University	RIKEN	Strategic Exploitation of Neuro-Genetics for Emergence of the Mind	30.68
Kazunori KATAOKA	University of Tokyo	JST	Development of Innovative Diagnostic and Therapeutic Systems Based on Nanobiotechnology	34.15

Tomoji KAWAI	Osaka University	Osaka University	R&D on Innovative Nanobiodevices Based on Single-Molecule Analysis - Ultra-fast Single-Molecule-DNA Sequencing, Ultra-Low-Concentration Virus Detection, and Ultra-Sensitive Biomolecule Monitoring -	28.77
Masaru KITSUREGAWA	University of Tokyo	University of Tokyo	Development of the Fastest Database Engine for the Era of Very Large Database and Experiment and Evaluation of Strategic Social Services Enabled by the Database Engine	39.48
Tsunenobu KIMOTO	Kyoto University	AIST (National Inst. of Advanced Industrial S&T)	Innovative SiC Power Electronics Technology Toward Low-Carbon Society	34.80
Masaru KURIHARA	Toray Industries	NEDO (New Energy & Industrial Tech Development Org.)	Mega-ton Water System	29.24
Yasuhiro KOIKE	Keio University	Keio University	Creation of Face-to-Face Communication Industry by Ultra High-Speed Plastic Optical Fiber and Photonics Polymers for High-Resolution and Large-Size Display	40.26
Tatsuhiko KODAMA	University of Tokyo	Molecular Dynamics Antibody Drug Technology Research Assoc.	Molecular Dynamics Initiative for Antibody Drug Development (MDADD)	28.76
Yoshiyuki SANKAI	University of Tsukuba	University of Tsukuba	World-Leading Human-Assistive Technology Supporting a Long-Lived Healthy Society	23.36
Hiroki SHIRATO	Hokkaido University	Hokkaido University	Sustainable Development of Molecular-Tracking Radiotherapy System	36.00
Hiroshi SEGAWA	University of Tokyo	AIST	Development of Organic Photovoltaics toward a Low-Carbon Society: Pioneering Next-Generation Solar Cell Technologies and Industries via Multi-Manufacturer Cooperation	30.67

Koichi TANAKA	Shimadzu Corporation	JST	Contribution toward Drug Discovery and Diagnosis by Next-Generation Advanced Mass Spectrometry System	34.00
Yoshinori TOKURA	University of Tokyo	RIKEN	Quantum Science of Strongly Correlated Systems	30.99
AKIRA TONOMURA	Hitachi, Ltd.	JST	Development and Application of Atomic-Resolution Holography Electron Microscope	50.00
Ryozo NAGAI	University of Tokyo	University of Tokyo	Development of Optimized Therapeutic Strategies Against Cancer and Cardiovascular Disease Using Large-Scale Computing and Clinical Information	34.64
Shinichi NAKASUKA	University of Tokyo	University of Tokyo	Establishment of New Paradigm of Space Development and Utilization with Nano-Satellites Introducing Japanese-Original "Reasonably Reliable Systems Engineering"	41.05
Hideo HOSONO	Tokyo Institute of Technology	Tokyo Institute of Technology	Exploration of New Superconductors and Related Functional Materials and Application of Superconducting Wires for Industry	32.40
Noritaka MIZUNO	University of Tokyo	University of Tokyo	Innovative Basic Research Toward Creation of High-Performance Battery	28.43
Hitoshi MURAYAMA	University of Tokyo	University of Tokyo	Uncovering the Origin and Future of the Universe - Ultra-Wide-Field Imaging and Spectroscopy Reveal the Nature of Dark Matter and Dark Energy	32.08
Masashi YANAGISAWA	The University of Texas Southwestern Medical Center	University of Tsukuba	Molecular Mechanism and Control of Complex Behaviors	18.00

Shinya YAMANAKA	Kyoto University	Kyoto University	iPS Cell Project for Regenerative Medicine	50.00
Yoshihisa YAMAMOTO	National Institute of Informatics	National Institute of Informatics	Quantum Information Processing Project	32.50
Naoki YOKOYAMA	Fujitsu Laboratories	AIST	Development of Core Technologies for Green Nanoelectronics	45.83

The program announcement of the remaining fund of ¥50 billion (~$0.5 billion) to support young and women scientists was issued on April 5, 2010. The new program called **'Funding Program for Next Generation World-Leading Researchers'** (with no acronym) will support male researchers under the age of 45 and women researchers of all ages who conduct research designated to contribute to 'green innovation' and 'life innovation' at the basic, applied or development stage in any academic fields. The applicant must belong to a Japanese research institution at the time the award is made. Each ward amount will be up to ¥200 million (~$2 million) total for four years (JFY2010-2013). They expect to make about 300 awards. Applications should be submitted to JSPS between May 18 and 20, 2010. A decision will be made in November 2010. The selected projects will be subjected to a mid-term evaluation at the end of JFY2011. CSTP does not plan to hold the second competition of this program.